



# Washington State Enhanced Hazard Mitigation Plan

## Planning Process

The Hazard Mitigation Strategist from the Mitigation and Recovery Section of the Washington Military Department's Emergency Management Division (EMD) led the effort to review and revise the State Hazard Mitigation Plan (SHMP).

The Strategist managed the plan review process; convened meetings of the State Hazard Mitigation Advisory Team (SHMAT); wrote drafts of revised sections and facilitated their review; assisted state agencies with review and revision of facility data and their mitigation actions; reviewed local plans for information to include in state plan; and facilitated adoption of the standard SHMP by the EMD Director. Additionally, the Military Department's GIS Section assisted with development and analysis of the state agency facilities database and identification of at-risk facilities. The division's Hazard Mitigation Strategist led and directed this planning effort.

### I. Documentation of the Planning Process

**Requirement 44 CFR §201.4(c)(1): *Plan Content.*** To be effective the plan must include a description of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

#### Review and Revision of the State Hazard Mitigation Plan

The following process was used to review the various sections of the SHMP:

Maps, Charts and Visual Effects - Throughout the plan, maps, charts and graphs were updated with current information. Each altered item was dated to enable ease in reference to make certain the most current information was utilized.

Introduction / Assurances – Tab 1 - The EMD Hazard Mitigation Strategist reviewed and revised this section of the plan. Further review by other parties was not necessary, as the primary purpose of this section is to provide a restatement of required assurances outlined in 44 CFR 201.4.c.7.

Planning Process – Tab 2 - The EMD Hazard Mitigation Strategist reviewed and revised this section of the plan to reflect the process used to review the 2007 plan and make revisions for the 2010 plan. During this review process, it was determined that the information concerning

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the public outreach conducted in 2006 would be removed from the body of the document and placed in Tab 13 as a separate annex. Further review of this section by other parties was not necessary, as the primary purpose of this section is to document the plan review and revision process.

Coordination of Local Planning – Tab 3 - The Hazard Mitigation Strategist revised this section of the plan following review by the SHMAT of information from an analysis of local plans by section staff. During this planning cycle, many of the original (60) local plans approved by FEMA came into their update cycle, and local agencies began working on updating their plans. During the time period beginning January 2008 through January 2010, 48 plans were reviewed, encompassing well over 100 jurisdictions (tribes, counties, cities/towns, and special purpose districts). These newly completed plans were analyzed for various purposes. Among other things, the analysis examined local plan mitigation goals, determinations of vulnerability to natural hazards, and how communities made those determinations. The analysis showed that most mitigation goals in many of the local plans generally were aligned with the goals in the state plan. Advisory team members concluded, based on the analysis of local plans, that major change was not required to the state plan's goals and objectives. When reviewing the hazards of greatest concern to local communities, earthquake, flood and severe storm were also among those of greatest concern to the state as determined by the advisory team. In addition, a number of the plans submitted during this time period also included some element of Climate Change, as well as a number of other technological and man-made hazards (Hazardous Materials, Dam Safety, Cyber-Terrorism, and Public Health). It was determined that Climate Change, Dam Safety, Hazardous Materials, and Public Health would also be included in the State's plan this update edition.

Plan Maintenance – Tab 4 - The EMD Hazard Mitigation Strategist reviewed and revised this section of the plan. The SHMAT reviewed the proposed revisions, and team members made recommendations for the 2008-2011 plan maintenance process. Those recommendations and revisions were included within the Plan Maintenance section.

Risk Assessment – Tab 5 - SHMAT, as noted below, reviewed and made recommendations for revisions to the Risk Assessment, particularly the hazard profiles and a determination on the hazards of greatest concern to the state. The Hazard Mitigation Strategist revised text of the Risk Assessment Introduction to discuss the changes made in determining facilities vulnerable to various hazards; updated most hazard profiles (with the exception of Drought and Volcano) to include information on recent hazard events and new hazard zone maps, as available; oversaw review of profiles by hazard experts; and updated the profiles of the nine Homeland Security regions of the state. Annualized Losses were recalculated by the GIS analyst and updated where previously supplied, utilizing enhanced data with respect to state facilities as gathered by the State's Office of Financial Management. This provided a more viable loss estimation than had been previously developed, resulting, in some cases, in a lower loss estimation. More information is in the *Risk Assessment Introduction*, Tab 5; all methodology used to conduct analysis is contained within Tab 10, *Methodology*.

Four new hazard profiles were added to the plan during this update cycle: Climate Change, Dam Safety, Hazardous Materials, and Public Health. These profiles are contained within Tab 5, *Risk Assessment* portion of the plan, within the Man-Made/Technological section.

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Mitigation Strategy – Tab 6 - SHMAT, as noted, reviewed the mitigation action matrix and revisions made for the 2008 plan by participating agencies. The EMD Mitigation and Recovery Section staff revised and updated the text of the state and local capability assessments after review by members of the advisory team and appropriate state agencies, as well as the separate matrices of state and federal programs that have a hazard mitigation component. Additionally, in an effort to streamline the SHMP and to enhance ease of use, the staff combined the state agency mitigation actions lists into one single database, and removed the action matrix which was previously contained in this chapter, making reference to the Strategy portion of the plan (Tab 6). EMD also updated the remainder of the text in the chapter with current data and information.

Enhanced Plan – Tab 7 – Information within this section of the plan was updated to bring forward initiatives which have taken place since the 2007 plan. Also incorporated are new charts and information which provide additional evidence supporting the State's ability to manage and maintain the various programs.

Hazard Mitigation Programs Administrative Plan – Tab 8 – The 2009 edition of the Administrative Plan is incorporated in its entirety.

Five new sections were added to the plan this update cycle, as follows:

Loss Avoidance Study - Tab 9 – This meets the requirements of 44 CFR 201.5(b)(2)(iv) and is a detailed analysis of the effectiveness of various mitigation projects which have occurred within the State.

Methodology – Tab 10 –This section defines the various methods used to conduct the analysis within the SHMP. The intent is to provide examples and a source of information for local jurisdictions to utilize as they develop their plans.

Best Practices – Tab 11 –Following FEMA's practice of providing insight and examples, this section provides examples of some of Washington's *Best Practices* for various types of projects which have occurred within the State. It also provides a write-up completed by Wes Nims, Hazard Mitigation Grant Program Coordinator for Washington State Emergency Management and Randy Brake, Pierce County Surface Water Management Engineer, which provides a recap of a Pierce County mitigation project, and the difficulties the applicant experienced in completing the project. During the next plan update cycle, the intent is to continue these types of write-ups to demonstrate: various types of projects available for funding; provide examples on how to get the required information, and provide points of contact for other jurisdictions who are thinking about similar projects. Additionally, this tab will include a summary of the difficulties experienced by the EMD's Grants Section in processing applications and lessons learned on how to complete a successful application.

Best Available Sciences – Tab 12 – This section is intended to provide informational sources for the local jurisdictions to gain knowledge and information as they develop various elements of their plans.

Annexes – Tab 13 –This section will house information which has been removed from the plan and is a stand-alone document. These are examples which local jurisdictions can

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utilize within their plans if they elect to do so, or are documents which may be of benefit within the mitigation realm.

### Plan Adoption

The 2010 SHMP, standard plan, as defined in 44 CFR 201.4, will be adopted by a promulgated memorandum to agencies of state government by the State EMD Director. This will be done following receipt from FEMA of a notice of “pre-adoption” approval of the plan. FEMA will receive a copy of the adoption / promulgation memorandum immediately upon its issuance. Copies of documentation showing FEMA’s formal approval of the plan and state adoption of the plan become part of the plan upon their issuance.

### *State Hazard Mitigation Advisory Team*

The EMD Mitigation and Recovery Section assembled and convened SHMAT to provide guidance and assist with review and revision of the SHMP. The team functions as an advisor to the State Hazard Mitigation Strategist on hazard mitigation efforts, including ongoing review of the SHMP and its revision every three years.

The purpose of SHMAT is to:

Assist with preparing and revising the SHMP by:

- Reviewing profiles of natural hazards and of geographic regions of the state.
- Reviewing previous hazard mitigation planning practices and identifying progress made on actions recommended in the previous Mitigation Strategy.
- Reviewing and updating goals, objectives and strategies for the updated SHMP.
- Providing recommendations to enhance the plan.
- Provide ongoing monitoring of the hazard mitigation efforts after state adoption and FEMA approval of the plan.
- Assist in the annual review of the SHMP, and in the revision of the plan every three years.

Members of the team provide a variety of expertise and perspective to the planning process, including emergency management, natural hazards, land-use planning, building codes, transportation, and infrastructure. Most members are from state agencies.

Members are:

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<b>State Hazard Mitigation Advisory Team</b>	
<b>Representing / Expertise</b>	<b>Name, Organization</b>
State Hazard Mitigation Strategist	Beverly O'Dea - team convener State EMD; primary author
Local Emergency Managers	Mark Watkinson, Skagit County EM
Growth Management / Land-Use Planning	Leonard Bauer, Department of Commerce
Building Codes	Tim Nogler, State Building Code Council.
Transportation	John Himmel, Department of Transportation Julie Baker, Department of Transportation
Lifelines (water / power utilities, pipelines)	Sondra Walsh, Utilities and Transportation Commission
Geologic Hazards / Tsunami	Tim Walsh and Isabelle Sarikhan, Department of Natural Resources, Division of Geology and Earth Resources; Craig Weaver and Nathan Wood, USGS
Wildfire Hazard	Jeannie Abbott, Department of Natural Resources, Resource Protection Division
Flood Hazard	Dan Sokol, Jerry Franklin and Chuck Steele, Department of Ecology
Severe Weather	Ted Buehner, Warning Coordination Meteorologist, National Weather Service Seattle Forecast Office
Insurance	Joan Scofield, State Office of the Insurance Commissioner
Technological Hazards	Sadie Whitner, Dept. of Ecology – Hazardous Materials; David Owens, Department of Health – Public Health; Spencer Reeder, Department of Ecology – Climate Change; Doug Johnson, PE, Department of Ecology - Dam Safety
GIS	Cathy Walker, Washington State Military Dept.
Private Industry	Rob Flaner, Senior Planner and Ed Whitford, GIS Analyst - Tetra Tech, Inc. – Risk Analysis and Loss Avoidance Study (Snoqualmie)
Hazardous Materials	Dave Byers, Department of Ecology; Sadie Whitener, Department of Ecology
Public Health	Dave Owens, Department of Health, Dr. Marisa D'Angeli, Department of Health
Dam Safety	Doug Johnson, PE Department of Ecology
Climate Change	Spencer Reeder, Department of Ecology Robert Freitag, University of Washington

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The State Hazard Mitigation Advisory Team (SHMAT) met as a whole several times during the review and revision of the SHMP, including, but not limited to:

January 2009 – The team discussed the plan review and revision process; conducted an initial review and discussion of state plan goals; discussed potential federal plan review requirements that might impact revision of the 2007 plan; discussed the findings of a Mitigation and Recovery Section staff analysis of local plan mitigation goals, determinations of vulnerability to natural hazards, and the impact information in local plans should have on an updated state plan; and discussed whether a new methodology was needed to determine which natural hazards are of greatest concern to the state. Additionally, the team suggested adding pandemic flu/disease outbreak as one of the natural hazards to be addressed in the future, and suggested adding a discussion on how climate change might affect future natural hazard events to the risk assessment.

May 2009 – The team convened to review the hazard profiles for the two most recent declared disasters: Flooding and Severe Storm. The SHMAT determined that as we were already in the update process, any modifications to the hazard profiles could be captured during the update process, and an immediate revision was not necessary. The team continued its review and discussion of plan goals and objectives, a process to establish hazards of greatest concern in the risk assessment, and reviewed the mitigation strategy's narrative on the state capability assessment. The team discussed the hazard profiles contained in the Risk Assessment and made recommendations on possible changes to the profiles. The team also discussed current Climate Change legislation and how the ballot might impact the state. Out of the team's discussions came the following recommendations:

- Maintain the 2007 mitigation plan's five goals, and maintain the plan's objectives with a few modest language changes that did not impact their intent.
- Update/confirm the list of state programs to add to the state's capability assessment in the mitigation strategy.
- If time allowed, review the hazards to include information on the potential impacts of climate change upon our region.

July 2009 – The team completed its review of state mitigation goals, objectives, and strategies, and began discussing various elements of the enhanced section of the state plan. Information on legislative actions, funding sources and new studies were discussed and updated. The overall layout of the plan was discussed. New strategies were proposed with additions made.

January 2010 – This was the final group meeting of the SHMAT. The Team reviewed the Hazard Profiles and confirmed their accuracy; the methodology utilized to determine loss estimations was discussed and confirmed; the new risk assessment tool to be utilized was discussed with suggestions made for revision (incorporated into risk assessment); discussion ensued concerning new legislative actions which have the potential to impact mitigation initiatives; the Plan Maintenance Section was reviewed and discussed, with suggestions made and incorporated. The mitigation strategies for the state agencies were reviewed and confirmed; suggestions were made and incorporated for SHMAT strategies to enhance mitigation planning state wide.

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In addition to the SHMAT group meetings, Mitigation Strategist met with SHMAT members individually on several different occasions for specific hazard issues, strategy development and review, development of risk tool, and to capture necessary information for the various portions of the HMP.

Outside of these meetings, SHMAT members participated in county-level exercises; provided hazard specific training to state and local emergency managers; participated in scenario development; reviewed and provided feedback on the mitigation strategy matrix for the plan that included actions identified in the mitigation strategy chapter of the plan and from state agency annexes to the 2004 plan; reviewed the plan maintenance process proposed for the 2010-2013 period; and provided input concerning the Risk Assessment tool.

### II. Coordination Among Agencies and Program Integration

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**Requirement 44 CFR §201.4(b): *Planning Process.*** An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

#### State Agency Participation in the Washington SHMP

Participation of state agencies was important in the revision of the state plan. The following agencies participated by updating information about their facilities used to determine vulnerability to various hazards, reviewing actions identified in the 2004 and 2008 SHMP and providing a report card on progress, and identifying potential mitigation actions for the 2010-2013 period to respond to identified vulnerabilities.

Agencies that participated in the review and revision of the SHMP are:

#### State Agencies Participating in State Hazard Mitigation Plan

Agency	Participating Staff
Department of Agriculture	Dave Hodgeboom
Office of the Attorney General	Cami Feek
Department of Commerce	Leonard Bauer
Department of Employment Security	Arthur Florence
Economic and Revenue Forecast Council	Desiree Monroy
Environmental Hearing Office	Robyn Bryant
Department of Health	David Owens
Department of Information Services	Mary Beth Sweeten
Department of Labor and Industries	Chuck Hennigan
Department of Licensing	John Reda
Liquor Control Board	Mike Wolfe
Marine Employees Commission	Kathy Marshall
Military Department	Beverly O'Dea
	Cathy Walker
Department of Natural Resources	Tim Walsh
	Jeannie Abbott
	Isabelle Sarikhan
	Ray Cakir



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### State Agencies Participating in State Hazard Mitigation Plan

Agency	Participating Staff
Department of Ecology	Dan Sokol
Office of the Insurance Commissioner	Joan Scofield
Department of Revenue	Erick Kniestedt
State School for the Blind	Rob Tracey
Department of Social and Health Services	Sue Bush
State Auditor's Office	Marie Davis
Department of Transportation	John Himmel
	Julie Baker
University of Washington	Siri-Elizabeth McLean
Utilities and Transportation Commission	Sondra Walsh
Washington Horse Racing Commission	Robert Lopez
Western Washington University	Gayle Shipley

The following state agencies or individuals are new to the 2010 planning cycle:

Department of Ecology	Jerry Franklin
	Chuck Steele
	Dave Byers
	Sadie Whitener
	Spencer Reeder
Washington State Parks Dept.	Kimberly Heinrich
Big Bend Community College	Ryann Leonard, PhD
	Gail Hamburg
Columbia Basin Community College	Brady Brookes
Grays Harbor Community College	Tony Simone
Highline Community College	Larry Yok
Olympic College	Bill Wilkie
Wenatchee Valley Community College	Bruce Merighi
Yakima Valley Community College	Jeff Wood
Washington State Conservation Commission	Bill Eller
Washington State Office of the Governor	Antonio M. Ginatta
Department of Ecology	Peggy O'Neill
Department of Fish and Wildlife	Bill Phillips
Department of General Administration	Bob Bippert
Office of Financial Management	Sadie Hawkins
	Amy McMahon
	Chuck McKinney

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Office of Superintendent of Public Instruction  
Washington State Patrol

Barbara Thurman  
Tyler Ray  
Ronald Bowen  
Craig Johnson

The following Federal Agencies and private businesses were also part of the 2010 plan development process:

FEMA Region X

Kristen Meyers  
Brett Holt

NOAA

Ted Buehner  
Tyree Wilde  
Anthony Cavallucci

USGS

Dennis Hull  
Craig Weaver  
Brian Sherrod  
Nathan Wood

Tetra Tech

Rob Flaner  
Ed Whitford

HDR

Jerry Louthain

### Review of Hazard Profiles:

To ensure the accuracy and completeness of information on hazards, validate criteria to identify local jurisdictions most vulnerable to each hazard, and ensure conformity to federal hazard mitigation planning requirements, each revised Hazard Profile was review by at least one hazard expert. The EMD Mitigation and Recovery Section directed and managed the review process. Hazard experts from a variety of state and federal organizations and academic institutions conducted a review of each profile.

Participating experts, by hazard, are listed below:

#### Avalanche:

- Dr. Mark Moore, Director and Avalanche Meteorologist, Northwest Weather and Avalanche Center.

#### Drought:

- Eric Hurlbert, Domestic Marketing and Economic Development Chief, Washington Department of Agriculture. (Not reviewed for 2010 update as profile was not modified.)

#### Earthquake:

- Tim Walsh, Chief Geologist, Division of Geology and Earth Resources, Washington Department of Natural Resources.
- Craig Weaver, Seismologist, U.S. Geological Survey.

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- Nathan Wood, Research Geographer, U.S. Geological Survey.
- Brian Atwater, Research Scientist, U.S. Geological Survey, and Affiliate Professor, Quaternary Research Center, Department of Earth and Space Sciences, University of Washington.

### Flood:

- Dan Sokol, National Flood Insurance Program State Coordinator, Washington Department of Ecology.
- Jerry Franklin, National Flood Insurance Program Mapping Specialist, Washington Department of Ecology.
- Chuck Steele, National Floodplain Management Specialist, Washington State Department of Ecology

### Landslide:

- Dr. Dave Montgomery, Professor, Department of Earth and Space Sciences, and Director, Quaternary Research Center, University of Washington.

### Severe Storm:

- Ted Buehner, Warning Coordination Meteorologist, National Weather Service, Seattle Forecast Office.
- Tyree Wilde, Warning Coordination Meteorologist, National Weather Service Portland, OR, Forecast Office.
- Anthony Cavallucci, Warning Coordination Meteorologist, National Weather Service Spokane Forecast Office.
- Dennis Hull, Warning Coordination Meteorologist, National Weather Service Spokane Forecast Office
- Josiah Mault, Assistant State Climatologist, Office of the State Climatologist, University of Washington.

### Tsunami

- Tim Walsh, Chief Geologist, Division of Geology and Earth Resources, Washington Department of Natural Resources.
- Brian Atwater, Research Scientist, U.S. Geological Survey, and Affiliate Professor, Quaternary Research Center, Department of Earth and Space Sciences, University of Washington.
- Hal Mofjeld, Affiliate Professor, School of Oceanography, University of Washington.
- Dr. Aggeliki Barberopoulou, Researcher, Tsunami Research Center, Viterbi School of Engineering, University of Southern California.
- Dr. Nathan Wood, Research Geographer, U.S. Geological Survey.

### Volcano

- William Scott, Scientist-in-Charge, Cascades Volcano Observatory, U.S. Geological Survey.

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### Wildland Fire

- Jeannie Abbott, Emergency Preparedness Coordinator, Resource Protection Division, Washington Department of Natural Resources.
- Bob Bannon, Natural Resource Program Section Administrator, Resource Protection Division, Washington Department of Natural Resources.

### Man-Made/Technological Hazards:

#### Public Health

- David Owens, Emergency Health and Medical Logistics Manager, Washington State Department of Health
- David Banks, Emergency Response Exercise & Plans Coordinator, Washington State Department of Health
- Dr. Marisa D'Angeli, Washington State Department of Health, CD-Epi Division
- Dave Hodgeboom, Homeland Security Program, Washington State Department of Agriculture.

#### Hazardous Materials

- David Byers, Response Manager, Washington State Department of Ecology
- Sadie Whitener, Environmental Specialist, Washington State Department of Ecology

#### Climate Change

- Spencer Reeder, Environmental Planner, Washington State Department of Ecology
- Robert Freitag, University of Washington

#### Dam Safety

- Doug Johnson, Public Engineer, Washington State Department of Ecology, Dam Safety Program

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### Public Outreach and Technical Assistance – 2007-2010 Update Cycle

While the 2007 plan edition included public outreach which was conducted during the fall 2006, it was determined that during this planning cycle, rather than devoting staff time to conduct a similar type information gathering sessions, efforts would instead be devoted to providing additional technical assistance and training to the local jurisdictions who were developing or updating their Hazard Mitigation Plans. The data which was gathered during the 2006 public outreach events has been removed from the body of this section and placed in Tab 13, the Annex portion of the SHMP as Annex 1. It was determined that the information, while dated, still maintains value with respect to issues of concern, and also provides an excellent example of a type of public outreach which can be utilized by jurisdictions as they complete their public outreach requirement for plan development.

The decision to place emphasis on technical assistance and training rather than conduct public outreach was based on a number of factors, the first being the large number of plans anticipated for renewal between the 2008-2010 timeframe based on FEMA's five year update cycle, as follows:

- 2008 - seven plans were due
- 2009 – 31 plans were due
- 2010 - 20 plans are due

(Additional information with respect to the current status of mitigation plans throughout the state is also available in Tab 3, *Coordination of Local Planning*.)

As of January 31, 2010, the actual breakdown of plan development is as follows:

- 25 +/- plans currently in the update cycle (some have gone through state and/or FEMA review and are making necessary changes);
- 36 jurisdictions have received grants for plan updates or development (represents FY07-FY10); and
- 25 +/- new plans are currently under development

(Note: In some cases, these numbers are represented in more than one category, e.g., received a *grant* for a *new plan* – included in both categories.)

Another significant issue which directly impacted the update and development process throughout the state is the condition of the economy. As of 2009, 19 of the 39 counties in Washington were considered *distressed*, meaning that each of the counties maintained a three-year average unemployment rate equal to or greater than 120% of the statewide unemployment rate. Because of this, many jurisdictions were required to reduce their work force and limit the amount of travel for their employees. This left a large void within many jurisdictions which lost personnel who, in many cases, were the people who had previously developed the mitigation plans.

The decision to enhance technical assistance was also based on the fact that FEMA requirements had changed since the original plans were developed. Based on the number of local plans between 2007-2010 which were up for renewal, and the number currently in process, it was determined that additional training would be required to provide the local

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planners with the information necessary to complete the plans. However, this effort was further complicated by the state of the economy in that many jurisdictions restricted travel and personnel were not able to receive the needed training.

In an attempt to pool resources and eliminate additional travel, it was determined that another approach would be to combine meetings. Therefore, in an effort to administer additional technical assistance to jurisdictions that would not otherwise have been able to attend training, the Mitigation Strategist attended meetings held in conjunction with other events which are well attended by representatives from across the state: the Partners in Preparedness Conference and the annual SERC/TERC/LEPC conference held in Eastern Washington.

Both of these conferences provided an opportunity for many jurisdiction to gain one-on-one assistance during their plan development, something many jurisdictions would not have been able to otherwise gain had the meetings not been paired together. For a few jurisdictions whose economy had been severely impacted, the State was able to provide training funds to assist in covering the cost for the locals to attend training. In addition, an extensive amount of one-on-one technical assistance was also provided via telephone and web-based meetings, as well as several workshops, and many on-site technical assistance sessions. See Tab 3, *Coordination for Local Planning* for additional information on all of the various types of technical assistance provided to local jurisdictions.